



APR 01 1993

ORIGINAL

MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 2593 MICROBIOCIDIC

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 1 PRODUCT IDENTIFICATION

TRADE NAME: NALCO 2593 MICROBIOCIDIC

DESCRIPTION: An aqueous solution of substituted isothiazolinone

NFPA 704M/HMIS RATING: 3/3 HEALTH 0/0 FLAMMABILITY 0/0 REACTIVITY 0 OTHER
0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme

SECTION 2 HAZARDOUS INGREDIENTS

Our hazard evaluation has identified the following chemical ingredient(s) as hazardous under OSHA's Hazard Communication Rule, 29 CFR 1910.1200. Consult Section 14 for the nature of the hazard(s).

INGREDIENT(S)	CAS #	APPROX. %
5-chloro-2-methyl-4 isothiazolin-3-one	26172-55-4	1.15
2-methyl-4-isothiazolin-3-one	2682-20-4	0.35

SECTION 3 PRECAUTIONARY LABEL INFORMATION

DANGER: Corrosive. Causes eye damage and skin burns. May cause allergic skin reaction. May be harmful if inhaled. May be fatal if swallowed or absorbed through the skin. Do not get in eyes, on skin, or on clothing. Wear goggles or face shield and rubber gloves when handling. Avoid breathing vapor or mist. Avoid contamination of food. Do not take internally. Wash thoroughly after handling.

SECTION 4 FIRST AID INFORMATION

EYES: Immediately flush for at least 15 minutes while holding eyelids open. Call a physician at once.

SKIN: Wash thoroughly with soap and rinse with water. Remove and wash contaminated clothing before reuse.

INGESTION: Do not induce vomiting. Drink promptly a large quantity of milk, egg whites, gelatin solution, or, if these are not available, drink large quantities of water. Avoid alcohol. Call a physician immediately.

INHALATION: Remove immediately to fresh air. If not breathing, apply artificial respiration. If breathing is difficult, give oxygen. Call a physician.

NOTE TO PHYSICIAN: Based on the individual reactions of the patient, the physician's judgment should be used to control symptoms and clinical condition.

CAUTION: If unconscious, having trouble breathing or in convulsions, do not



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 2593 MICROBIOCIDES

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 4 FIRST AID INFORMATION

(CONTINUED)

induce vomiting or give water.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage. Measures against circulatory shock, respiratory depression and convulsions may be needed.

SECTION 5 HEALTH EFFECTS INFORMATION

PRIMARY ROUTE(S) OF EXPOSURE: Eye, Skin, Inhalation

EYE CONTACT: Corrosive to the eyes with possible permanent damage depending on the length of exposure and on the first aid action given.

SKIN CONTACT: Corrosive to the skin, possibly resulting in third degree burns depending on the length of exposure and on the first aid action given. Can be harmful if absorbed. Can cause allergic contact dermatitis in susceptible individuals.

INGESTION: Can be fatal.

INHALATION: Can be corrosive to the mucous membranes and the lungs. Can cause an allergic reaction in susceptible individuals.

SYMPTOMS OF EXPOSURE: A review of available data does not identify any symptoms from exposure not previously mentioned.

AGGRAVATION OF EXISTING CONDITIONS: A review of available data does not identify any worsening of existing conditions.

SECTION 6 TOXICOLOGY INFORMATION

TOXICITY STUDIES: Toxicity studies have been conducted on this product. The results are shown below.

ACUTE ORAL TOXICITY (ALBINO RATS): $LD_{50} = 3,810$ mg/kg

95% Confidence Limit = 3,530 - 4,220 mg/kg

ACUTE DERMAL TOXICITY (ALBINO RABBITS):

$LD_{50} =$ Greater than 5,000 mg/kg

ACUTE INHALATION TOXICITY (ALBINO RATS):

For solution of 1% active ingredients $LC_{50} = 13.7$ mg/L



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 2593 MICROBIOCIDES

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 6 TOXICOLOGY INFORMATION

(CONTINUED)

COMMENTS: Four-hour nominal concentration for a solution containing 1% active ingredients.

SKIN IRRITATION INDEX DRAIZE RATING: Severe irritant

EYE IRRITATION INDEX DRAIZE RATING: Corrosive (corneal damage)

SKIN SENSITIZATION: This product is a human sensitizer in its undiluted form.

A Guinea pig (Buehler Technique) sensitization study with an induction dosage of 90 ppm of active ingredients followed by a insult of 429 ppm of active ingredients was positive.

A human repeated insult patch study of 28 ppm active ingredients followed by a insult of 56 ppm of active ingredients resulted in no effect to the subjects tested.

SUBCHRONIC TOXICITY RESULTS: A 90-day dietary study in dogs of 840 ppm of the product's active ingredients resulted in no mortalities or pathological findings. A 90-day dermal study in rabbits of 0.4 mg/kg/day of the product's active ingredients resulted in irritation but no pathological effects.

CHRONIC TOXICITY RESULTS: A teratology study with rabbits and rats was negative with dosages of active ingredient ranging from 1.5 mg/kg to 15 mg/kg. Mutagenicity results were equivocal. A 30-month skin painting mouse study with applications of 400 ppm of active ingredients three times per week showed no increase tumor frequency over control animals.

SECTION 7 PHYSICAL AND CHEMICAL PROPERTIES

COLOR: Pale yellow to green	FORM: Liquid	ODOR: Mild
DENSITY: 8.6 lbs/gal.		
SOLUBILITY IN WATER: Completely		
pH (NEAT) = 3 - 5		ASTM E-70
FREEZE POINT: 25 Degrees F		ASTM D-1177
FLASH POINT: None		

NOTE: These physical properties are typical values for this product.

SECTION 8 FIRE AND EXPLOSION INFORMATION

FLASH POINT: None

EXTINGUISHING MEDIA: Not applicable



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 2593 MICROBIOCIDE

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 8 FIRE AND EXPLOSION INFORMATION

(CONTINUED)

UNUSUAL FIRE AND EXPLOSION HAZARD: May evolve NO_x, SO_x or HCl under fire conditions. Containers exposed in a fire should be cooled with water to prevent vapor pressure buildup leading to a rupture. Do not let material evaporate to dryness.

SECTION 9 REACTIVITY INFORMATION

INCOMPATIBILITY: None known

THERMAL DECOMPOSITION PRODUCTS: In the event of combustion CO, CO₂, NO_x, SO_x, HCl may be formed. Do not breathe smoke or fumes. Wear suitable protective equipment.

SECTION 10 PERSONAL PROTECTION EQUIPMENT

RESPIRATORY PROTECTION: If it is possible to generate significant levels of vapors or mists, a NIOSH approved or equivalent respirator is recommended.

For large spills, entry into large tanks, vessels or enclosed small spaces with inadequate ventilation, a pressure-demand, self-contained breathing apparatus is recommended.

VENTILATION: General ventilation is recommended. Additionally, local exhaust ventilation is recommended where vapors, mists or aerosols may be released.

PROTECTIVE EQUIPMENT: Wear gloves, boots, apron and a face shield with chemical splash goggles. (Based on test data obtained from materials of construction, the following recommendations are listed for gloves along with their break-through times: Butyl rubber (greater than 8 hours); polyvinyl chloride (greater than 7.5 hours) and neoprene coated (greater than 6 hours). A full slicker suit is recommended if gross exposure is possible.

The availability of an eye wash fountain and safety shower is recommended.

If clothing is contaminated, remove clothing and thoroughly wash the affected area. Launder contaminated clothing before reuse.

SECTION 11 SPILL AND DISPOSAL INFORMATION

IN CASE OF TRANSPORTATION ACCIDENTS, CALL THE FOLLOWING 24-HOUR TELEPHONE NUMBER (708-920-1510)

SPILL CONTROL AND RECOVERY:



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 2593 MICROBIOCIDE

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 11 SPILL AND DISPOSAL INFORMATION

(CONTINUED)

Small liquid spills: Contain with absorbent material, such as clay, soil or any commercially available absorbent. Shovel reclaimed liquid and absorbent into recovery or salvage drums for disposal. Refer to CERCLA in Section 14.

Large liquid spills: Dike to prevent further movement and reclaim into recovery or salvage drums or tank truck for disposal. Refer to CERCLA in Section 14.

For large indoor spills, evacuate employees and ventilate area. Those responsible for control and recovery should wear the protective equipment specified in Section 10.

This product is toxic to fish. It should not be directly discharged into lakes, ponds, streams, waterways or public water supplies.

DISPOSAL: If this product becomes a waste, it meets the criteria of a hazardous waste as defined under the Resources Conservation and Recovery Act (RCRA) 40 CFR 261. Hazardous Waste D002.

As a hazardous liquid waste, it must be solidified with stabilizing agents (such as sand, fly ash, or cement) so that no free liquid remains before disposal to a licensed industrial waste landfill (Hazardous Waste Treatment, Storage and Disposal facility). A hazardous liquid waste can also be incinerated in accordance with local, state, and federal regulations.

Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instruction, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

METAL CONTAINERS: Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local authorities.

PLASTIC CONTAINERS: Do not reuse empty container. Triple rinse (or equivalent). Then puncture and dispose of in a sanitary landfill, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

SECTION 12 ENVIRONMENTAL INFORMATION

CHEMICAL OXYGEN DEMAND (COD): 20,000 mg/L



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 2593 MICROBIOCIDES

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 12 ENVIRONMENTAL INFORMATION

(CONTINUED)

TOTAL ORGANIC CARBON (TOC): 7,850 mg/L

AQUATIC DATA: Active ingredient.

6 day static acute LC_{50} to Bluegill Sunfish = 0.54 ppm

Standard Deviation of 6 day LC_{50} = 0.47 - 0.62 ppm

6 day dynamic acute LC_{50} to Fathead Minnow = 0.12 ppm

Standard Deviation of 6 day LC_{50} = 0.06 - 0.15 ppm

48 hour acute LC_{50} to Daphnia Magna = 0.13 - 0.18 ppm

6 day dynamic acute LC_{50} to Rainbow Trout = 0.14 ppm

Standard Deviation of 6 day LC_{50} = 0.12 - 0.17 ppm

96 hour static acute LC_{50} to Sheepshead minnow = 0.3 ppm

Standard Deviation of 96 hour LC_{50} = 0.18 - 0.50 ppm

Results below are based on a 1.5% solution of the active ingredients

48 hour acute LC_{50} to Ceriodaphnia Dubia = 15 mg/L

48 hour no observed effect concentration is 10 mg/L based on no mortality or abnormal effects.

OTHER STUDIES: Avian species:

Acute oral LD_{50} to Bobwhite Quail = 97 mg/kg

Standard Deviation of LD_{50} = 64 - 114 mg/kg

8 day dietary LD_{50} to Pekin Duck = 560 ppm of active ingredients

AQUATIC DATA: Product.

96 hour static acute LC_{50} to Mysids = 18 mg/L

96 hour no observed effect concentration is less than 10 mg/L based on no mortality or abnormal effects.

TOXICITY RATING: Moderately toxic

96 hour static acute LC_{50} to Sheepshead Minnow = 32 mg/L



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 2593 MICROBIOCIDES

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 12 ENVIRONMENTAL INFORMATION

(CONTINUED)

96 hour no observed effect concentration is 18 mg/L based on no mortality or abnormal effects.

TOXICITY RATING: Moderately toxic

If released into the environment, see CERCLA in Section 14.

SECTION 13 TRANSPORTATION INFORMATION

DOT PROPER SHIPPING NAME/HAZARD CODE - CORROSIVE LIQUID, N.O.S.
CORROSIVE MATERIAL UN 1760
CONTAINS - 5-CHLORO-2-METHYL-4-
ISOTHIAZOLIN-3-ONE

SECTION 14 REGULATORY INFORMATION

The following regulations apply to this product.

FEDERAL REGULATIONS:

OSHA'S HAZARD COMMUNICATION RULE, 29 CFR 1910.1200:

Based on our hazard evaluation, the following ingredients in this product are hazardous and the reasons are shown below.

5-chloro-2-methyl-4 isothiazolin-3-one - Corrosive, sensitizer
2-methyl-4-isothiazolin-3-one - Corrosive, sensitizer

5-chloro-2-methyl-4 isothiazolin-3-one (mist or aerosol) = 0.5 mg/m³ TLV
Manufacturer's recommendation

CERCLA, 40 CFR 117, 302:

Notification of spills of this product is not required.

SARA/SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986
(TITLE III) - SECTIONS 302, 311, 312 AND 313:

SECTION 302 - EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355):

This product does not contain ingredients listed in Appendix A and B as an Extremely Hazardous Substance.

SECTIONS 311 and 312 - MATERIAL SAFETY DATA SHEET REQUIREMENTS (40 CFR 370):
Our hazard evaluation has found this product to be hazardous. The product should be reported under the following EPA hazard categories:



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 2593 MICROBIOCIDES

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 14 REGULATORY INFORMATION

(CONTINUED)

- XX Immediate (acute) health hazard
- Delayed (chronic) health hazard
- Fire hazard
- Sudden release of pressure hazard
- Reactive hazard

SECTION 313 - LIST OF TOXIC CHEMICALS (40 CFR 372):

This product does not contain ingredients on the List of Toxic Chemicals.

TOXIC SUBSTANCES CONTROL ACT (TSCA):

The active ingredients are exempted under TSCA and regulated under FIFRA as follows. All the inert ingredients are found on the TSCA Master Inventory List.

FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT (FIFRA):

EPA Reg. No. 1706-153. This product is registered for use as a microorganism control chemical used in industrial recirculating cooling water tower systems, used in brewery pasteurizers, and used in air washer systems. In all cases follow instructions on the product label.

This product has been certified as KOSHER/PAREVE for year-round use EXCEPT FOR THE PASSOVER SEASON by the CHICAGO RABBINICAL COUNCIL.

RESOURCE CONSERVATION AND RECOVERY ACT (RCRA), 40 CFR 261 SUBPART C & D:
Consult Section 11 for RCRA classification.

FEDERAL WATER POLLUTION CONTROL ACT, CLEAN WATER ACT, 40 CFR 401.15
(formerly Sec. 307), 40 CFR 116 (formerly Sec. 311):

This product contains the following ingredients covered by the Clean Water Act:

Cupric nitrate - Section 307, 311

CLEAN AIR ACT, Sec. 111 (40 CFR 60), Sec. 112 (40 CFR 61, 1990 Amendments):
This product does not contain ingredients covered by the Clean Air Act.

STATE REGULATIONS:



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 2593 MICROBIOCIDES

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 14 REGULATORY INFORMATION

(CONTINUED)

CALIFORNIA PROPOSITION 65:

This product does not contain any chemicals which require warning under California Proposition 65.

MICHIGAN CRITICAL MATERIALS:

This product contains the following substance(s) identified on the Michigan Critical Materials Register:

Copper, as Cu = 0.025%

STATE RIGHT TO KNOW LAWS:

The following state(s) identify the ingredient(s) shown below as hazardous:

California - Copper

Massachusetts, New Jersey, Pennsylvania - magnesium nitrate

INTERNATIONAL REGULATIONS:

This is not a WHMIS controlled product under The House of Commons of Canada Bill C-70.

SECTION 15 ADDITIONAL INFORMATION

Note: Other toxicological results are available upon request.

SECTION 16 USER'S RESPONSIBILITY

This product material safety data sheet provides health and safety information. The product is to be used in applications consistent with our product literature. Individuals handling this product should be informed of the recommended safety precautions and should have access to this information. For any other uses, exposures should be evaluated so that appropriate handling practices and training programs can be established to ensure safe workplace operations. Please consult your local sales representative for any further information.

SECTION 17 BIBLIOGRAPHY

ANNUAL REPORT ON CARCINOGENS, U.S. Department of Health and Human Services, Public Health Service, PB 33-135855, 1983.

CASARETT AND DOULL'S TOXICOLOGY, THE BASIC SCIENCE OF POISONS, Doull, J., Klaassen, C. D., and Admur, M. O., eds., Macmillan Publishing Company, Inc., N. Y., 2nd edition, 1980.



MATERIAL SAFETY DATA SHEET

PRODUCT

NALCO 2593 MICROBIOCIDES

Emergency Telephone Number

Medical (708) 920-1510 (24 hours)

SECTION 17 BIBLIOGRAPHY

(CONTINUED)

CHEMICAL HAZARDS OF THE WORKPLACE, Proctor, N. H., and Hughes, J. P., eds., J. P. Lipincott Company, N.Y., 1981.

DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS, Sax, N. Irving, ed., Van Nostrand Reinhold Company, N.Y., 6th edition, 1984.

IARC MONOGRAPHS ON THE EVALUATION OF THE CARCINOGENIC RISK OF CHEMICALS TO MAN, Geneva: World Health Organization, International Agency for Research on Cancer, 1972-1977.

PATY'S INDUSTRIAL HYGIENE AND TOXICOLOGY, Clayton, G. D., Clayton, F. E., eds., John Wiley and Sons, N. Y., 3rd edition, Vol. 2 A-C, 1981.

REGISTRY OF TOXIC EFFECTS ON CHEMICAL SUBSTANCES, U.S. Department of Health and Human Services, Public Health Service, Center for Disease Control, National Institute for Occupational Safety and Health, 1983 supplement of 1981-1982 edition, Vol. 1-3, OH, 1984.

Title 29 Code of Federal Regulations Part 1910, Subpart Z, Toxic and Hazardous Substances, Occupational Safety and Health Administration (OSHA).

THRESHOLD LIMIT VALUES FOR CHEMICAL SUBSTANCES AND PHYSICAL AGENTS IN THE WORKROOM ENVIRONMENT WITH INTENDED CHANGES, American Conference of Governmental Industrial Hygienists, OH.

PREPARED BY: Ricky A. Stackhouse PhD., Toxicologist

DATE CHANGED: 03/18/93

DATE PRINTED: 03/20/93